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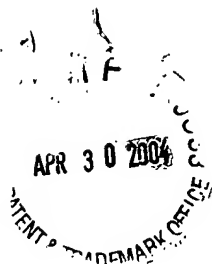
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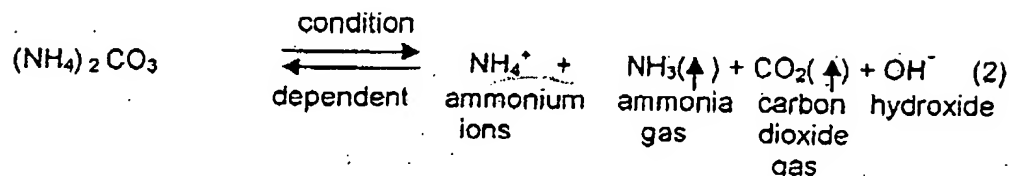
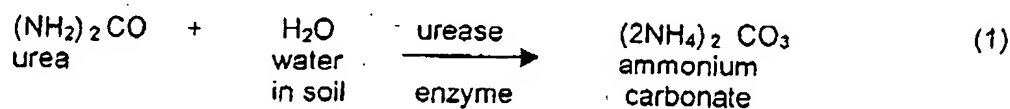
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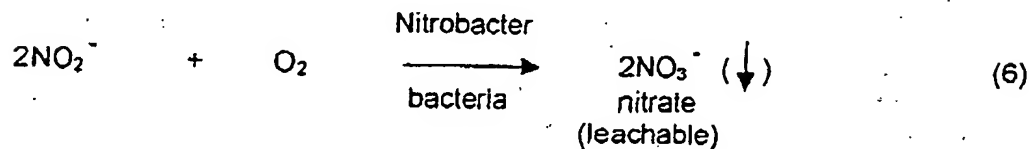
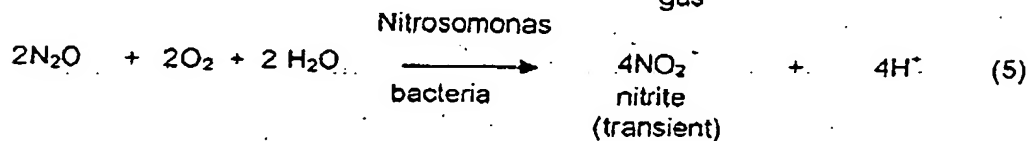
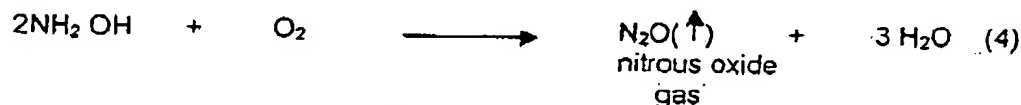
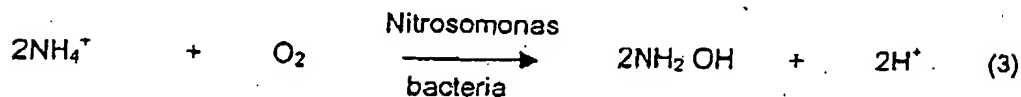


Chemical reactions involving urea and its reaction products in the soil

(a) Hydrolysis of urea to ammonium



(b) Oxidation of ammonium to nitrate ("nitrification")



Notes:

- Reaction (2) gives rise to losses of ammonia gas (NH_3)
- Reaction (4) gives rise to losses of nitrous oxide gas (N_2O)
- Reaction (6) gives rise to leaching of nitrate (NO_3^-)
- Reaction (2) gives rise to temporary increase in pH
- Reactions (3) and (5) give rise to ultimate decrease in pH

- Urease "inhibitor" acts by directly slowing the rate of reaction (1) and by indirectly slowing the rate of reactions (2) - (6)
- Nitrification "inhibitors" act by slowing some or all of reactions (3) - (6)
- Sulphur-coating reduces the speed with which the conversion of urea to other products can take place, principally by slowing contact of the urea with water and oxygen, and reducing the pH near the granule.

FIGURE 1

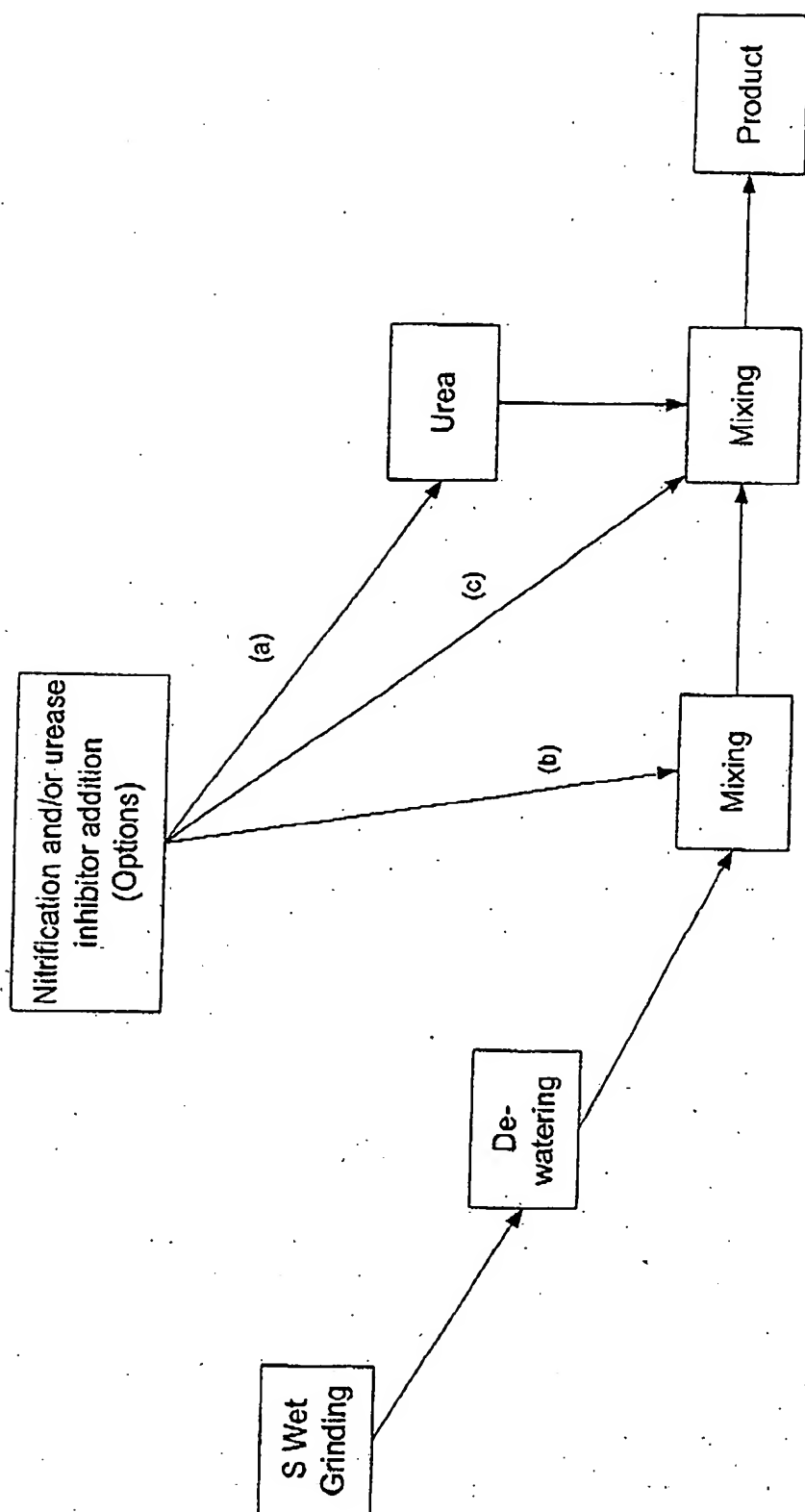


FIGURE 2